Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Original) A rotating mechanical seal comprising: a sliding ring (5) being attached to a shaft (1) by an O-ring (6), the sliding ring rotating with the shaft (1); and a non-rotating backing ring (4) which is attached by way of an O-ring (3) to a housing (2) of a compressor so as to be gas-tight, wherein the sliding ring (5) and backing ring (4) are pressed one against the other by way of a spring (8) to form a seal and slide one upon the other, and wherein one of the rings (4, 5) is made of a carbon and silicon carbide composite material and the other of a silicon carbide material.

2. (Original) The seal according to Claim 1, wherein the carbon and silicon carbide composite material exhibits a structure which is obtained by partial conversion of the surface layer of the carbon substrate into a silicon carbide material.

3. (Original) The seal according to Claim 1, wherein the surface of the carbon and silicon carbide composite material has a carbon content from 40% to 85% and a silicon conversion ratio of from 60% to 15%.

4. (Original) The seal according to Claim 2, wherein the surface of the carbon and silicon carbide composite material has a carbon content from 40% to 85% and a silicon conversion ratio of from 60% to 15%.

5. (Original) The seal according to Claim 1, wherein the silicon carbide material exhibits individual, non-contiguous pores of a mean pore size of not greater than 60 μm at porosity of from 2% to 15%.

6. (Original) The seal according to Claim 2, wherein the silicon carbide material exhibits individual, non-contiguous pores of a mean pore size of not greater than 60 μm at porosity of from 2% to 15%.

7. (Original) The seal according to Claim 3, wherein the silicon carbide material exhibits individual, non-contiguous pores of a mean pore size of not greater than 60 μm at porosity of from 2% to 15%.

8. (Original) The seal according to Claim 4, wherein the silicon carbide material exhibits individual, non-contiguous pores of a mean pore size of not greater than 60 μm at porosity of from 2% to 15%.

9. (Currently Amended) A rotating mechanical [[The]] seal ~~according to Claim 1,~~ comprising: a sliding ring (5) being attached to a shaft (1) by an O-ring (6), the sliding ring rotating with the shaft (1); and a non-rotating backing ring (4) which is attached by way of an O-ring (3) to a housing (2) of a compressor so as to be gas-tight, wherein the sliding ring (5) and backing ring (4) are pressed one against the other by way of a spring (8) to form a seal and slide one upon the other, and wherein one of the rings (4, 5) is made of a carbon and silicon carbide composite material and the other of a silicon carbide material,

wherein the carbon and silicon carbide composite material exhibits sealing surface properties with a roughness value of from 0.005 to 0.07 μm and the silicon carbide material exhibits sealing surface properties with a roughness value from 0.002 to 0.03 μm, expressed as mean arithmetic roughness (R_a), with the pores being excepted.

10. (Currently Amended) A rotating mechanical [[The]] seal ~~according to Claim 2,~~ comprising: a sliding ring (5) being attached to a shaft (1) by an O-ring (6), the sliding ring rotating with the shaft (1); and a non-rotating backing ring (4) which is attached by way of an O-ring (3) to a housing (2) of a compressor so as to be gas-tight, wherein the sliding ring (5) and backing ring (4) are pressed one against the other by way of a spring (8) to form a seal and slide one upon the other, and wherein one of the rings (4, 5) is made of a carbon and silicon carbide composite material and the other of a silicon carbide material,

wherein the carbon and silicon carbide composite material exhibits a structure which is obtained by partial conversion of the surface layer of the carbon substrate into a silicon carbide material, and

wherein the carbon and silicon carbide composite material exhibits sealing surface properties with a roughness value of from 0.005 to 0.07 μm and the silicon carbide material exhibits sealing surface properties with a roughness value from 0.002 to 0.03 μm, expressed as mean arithmetic roughness (R_a), with the pores being excepted.

11. (Currently Amended) A rotating mechanical [[The]] seal ~~according to Claim 3,~~ comprising: a sliding ring (5) being attached to a shaft (1) by an O-ring (6), the sliding ring rotating with the shaft (1); and a non-rotating backing ring (4) which is attached by way of an O-ring (3) to a housing (2) of a compressor so as to be gas-tight, wherein the sliding ring (5) and backing ring (4) are pressed one against the other by way of a spring (8) to form a seal and slide one upon the other, and wherein one of the rings (4, 5) is made of a carbon and silicon carbide composite material and the other of a silicon carbide material,

wherein the surface of the carbon and silicon carbide composite material has a carbon content from 40% to 85% and a silicon conversion ratio of from 60% to 15%, and

wherein the carbon and silicon carbide composite material exhibits sealing surface properties with a roughness value of from 0.005 to 0.07 μm and the silicon carbide material exhibits sealing surface properties with a roughness value from 0.002 to 0.03 μm, expressed as mean arithmetic roughness (R_a), with the pores being excepted.

12. (Currently Amended) A rotating mechanical [[The]] seal ~~according to Claim 4,~~ comprising: a sliding ring (5) being attached to a shaft (1) by an O-ring (6), the sliding ring rotating with the shaft (1); and a non-rotating backing ring (4) which is attached by way of an O-ring (3) to a housing (2) of a compressor so as to be gas-tight, wherein the sliding ring (5) and backing ring (4) are pressed one against the other by way of a spring (8) to form a seal and slide one upon the other, and wherein one of the rings (4, 5) is made of a carbon and silicon carbide composite material and the other of a silicon carbide material,

wherein the carbon and silicon carbide composite material exhibits a structure which is obtained by partial conversion of the surface layer of the carbon substrate into a silicon carbide material,

wherein the surface of the carbon and silicon carbide composite material has a carbon content from 40% to 85% and a silicon conversion ratio of from 60% to 15%, and

wherein the carbon and silicon carbide composite material exhibits sealing surface properties with a roughness value of from 0.005 to 0.07 μm and the silicon carbide material exhibits sealing surface properties with a roughness value from 0.002 to 0.03 μm, expressed as mean arithmetic roughness (R_a), with the pores being excepted.

13. (Currently Amended) A rotating mechanical [[The]] seal ~~according to Claim 5,~~ comprising: a sliding ring (5) being attached to a shaft (1) by an O-ring (6), the sliding ring rotating with the shaft (1); and a non-rotating backing ring (4) which is attached by way of an O-ring (3) to a housing (2) of a compressor so as to be gas-tight, wherein the sliding ring (5) and backing ring (4) are pressed one against the other by way of a spring (8) to form a seal and slide one upon the other, and wherein one of the rings (4, 5) is made of a carbon and silicon carbide composite material and the other of a silicon carbide material,

wherein the silicon carbide material exhibits individual, non-contiguous pores of a mean pore size of not greater than 60 μm at porosity of from 2% to 15%, and

wherein the carbon and silicon carbide composite material exhibits sealing surface properties with a roughness value of from 0.005 to 0.07 μm and the silicon carbide material exhibits sealing surface properties with a roughness value from 0.002 to 0.03 μm, expressed as mean arithmetic roughness (R_a), with the pores being excepted.

14. (Currently Amended) A rotating mechanical [[The]] seal ~~according to Claim 6,~~ comprising: a sliding ring (5) being attached to a shaft (1) by an O-ring (6), the sliding ring rotating with the shaft (1); and a non-rotating backing ring (4) which is attached by way of an O-ring (3) to a housing (2) of a compressor so as to be gas-tight, wherein the sliding ring (5) and backing ring (4) are pressed one against the other by way of a

spring (8) to form a seal and slide one upon the other, and wherein one of the rings (4, 5) is made of a carbon and silicon carbide composite material and the other of a silicon carbide material,

wherein the carbon and silicon carbide composite material exhibits a structure which is obtained by partial conversion of the surface layer of the carbon substrate into a silicon carbide material,

wherein the silicon carbide material exhibits individual, non-contiguous pores of a mean pore size of not greater than 60 μm at porosity of from 2% to 15%, and

wherein the carbon and silicon carbide composite material exhibits sealing surface properties with a roughness value of from 0.005 to 0.07 μm and the silicon carbide material exhibits sealing surface properties with a roughness value from 0.002 to 0.03 μm, expressed as mean arithmetic roughness (R_a), with the pores being excepted.

15. (Currently Amended) A rotating mechanical [[The]] seal ~~according to Claim 7,~~ comprising: a sliding ring (5) being attached to a shaft (1) by an O-ring (6), the sliding ring rotating with the shaft (1); and a non-rotating backing ring (4) which is attached by way of an O-ring (3) to a housing (2) of a compressor so as to be gas-tight, wherein the sliding ring (5) and backing ring (4) are pressed one against the other by way of a spring (8) to form a seal and slide one upon the other, and wherein one of the rings (4, 5) is made of a carbon and silicon carbide composite material and the other of a silicon carbide material,

wherein the surface of the carbon and silicon carbide composite material has a carbon content from 40% to 85% and a silicon conversion ratio of from 60% to 15%,

wherein the silicon carbide material exhibits individual, non-contiguous pores of a mean pore size of not greater than 60 μm at porosity of from 2% to 15%, and

wherein the carbon and silicon carbide composite material exhibits sealing surface properties with a roughness value of from 0.005 to 0.07 μm and the silicon carbide material exhibits sealing surface properties with a roughness value from 0.002 to 0.03 μm, expressed as mean arithmetic roughness (R_a), with the pores being excepted.

16. (Currently Amended) A rotating mechanical [[The]] seal ~~according to Claim 8,~~ comprising: a sliding ring (5) being attached to a shaft (1) by an O-ring (6), the sliding ring rotating with the shaft (1); and a non-rotating backing ring (4) which is attached by way of an O-ring (3) to a housing (2) of a compressor so as to be gas-tight, wherein the sliding ring (5) and backing ring (4) are pressed one against the other by way of a spring (8) to form a seal and slide one upon the other, and wherein one of the rings (4, 5) is made of a carbon and silicon carbide composite material and the other of a silicon carbide material,

wherein the carbon and silicon carbide composite material exhibits a structure which is obtained by partial conversion of the surface layer of the carbon substrate into a silicon carbide material,

wherein the surface of the carbon and silicon carbide composite material has a carbon content from 40% to 85% and a silicon conversion ratio of from 60% to 15%,

wherein the silicon carbide material exhibits individual, non-contiguous pores of a mean pore size of not greater than 60 μm at porosity of from 2% to 15%, and

wherein the carbon and silicon carbide composite material exhibits sealing surface properties with a roughness value of from 0.005 to 0.07 μm and the silicon carbide material exhibits sealing surface properties with a roughness value from 0.002 to 0.03 μm, expressed as mean arithmetic roughness (R_a), with the pores being excepted.